Unlocking India’s Green Growth: State-Specific Opportunities in Renewable Energy and Green Manufacturing

India stands at the forefront of a transformative era, where state-led innovation in renewable energy and green manufacturing is driving a sustainable economic future. With ambitious goals to achieve 500 GW of renewable energy by 2030 and commit to net-zero emissions by 2070, each Indian state is uniquely positioned to deliver on national priorities while unlocking localized opportunities, investments, and jobs.

India’s National Vision: Green Energy and Manufacturing

India’s central government, under the vision of Prime Minister Narendra Modi, sets the stage for rapid green transition. In FY2024, the solar budget surged by 110% and overall renewable capacity crossed 200 GW. The National Green Hydrogen Mission and multiple climate action policies catalyse investments, clustering actions at the state level and driving integrated clean energy growth.

Rajasthan: Leading Solar Expansion in the Desert

Rajasthan is India’s solar pioneer, boasting installed solar capacity of 33.46 GW—far exceeding its 2024-25 target of 30 GW. Driven by vast desert tracts receiving intense solar radiation and over 300 sunny days, the state accounts for the highest share of India’s solar installation. The Bhadla Solar Park in Jodhpur, spanning 56.6 sq. km and 2,245 MW capacity, represents the scale and innovation possible in the region.

Opportunities include:

- Large solar parks anchoring grid stability
- Incentives for MSMEs to adopt solar rooftops
- Local manufacturing of panels and components, generating skilled jobs

Gujarat: Renewable Hubs and Hydrogen Clusters

Gujarat’s hot and dry climate supports 18.13 GW of solar energy and groundbreaking green hydrogen clusters. The state Renewable Energy Policy targets 100 GW solar by 2030 and sets new standards with the world’s largest renewable energy park planned in Kutch.

State highlights:

- Hydrogen cluster development for industrial decarbonisation
- Infrastructure for massive utility-scale energy integration

- Financial incentives for clean energy manufacturers and suppliers (capital subsidies, rebates, and streamlined approvals)

Maharashtra: Urban Industrial Decarbonisation

Maharashtra is accelerating green growth, particularly in urban-industrial clusters like Mumbai. As of early 2025, it achieved 9.88 GW solar capacity and launched the Mumbai Green Hydrogen Cluster. The state's energy policies focus on achieving 52% renewable mix by 2030 and producing 5 million metric tons of green hydrogen annually.

Key programs:

- Urban decarbonisation with hydrogen for petrochemical and manufacturing hubs
- Subsidies for anchor units in hydrogen and clean energy
- "Mukhyamantri Saur Krishi Vahini Yojana" targets 30% feeder solarization, empowering rural and urban grids.

Tamil Nadu: Wind-Solar Synergy and Industrial Collaboration

Tamil Nadu leverages tropical climate and wind corridors to combine over 9.77 GW solar and sizeable wind resources, planning 20 GW new additions by 2030. Strong public-private partnerships (NTPC, IOCL) and state innovation foster:

- Expansion of district solar power plants
- Hydrogen integration in industrial operations
- Incentives and subsidies for research, installation, and manufacturing

Andhra Pradesh: Clean Energy Policy and Strategic Manufacturing

With 4.84 GW solar installed and a target of 160 GW clean energy (including storage) by 2030, Andhra Pradesh is a rising renewable hub. Initiatives like the AM Green Kakinada Cluster position the state as a leader in green ammonia, leveraging $3 billion in direct investments.

Growth opportunities:

- Utility-scale solar parks with fast-track permitting and approvals
- Manufacturing facilities for batteries, panels, and green chemicals
- Export-oriented renewable clusters integrating port infrastructure

Kerala and Odisha: Green Valleys and Sustainable Industrial Parks

Kerala's Green Hydrogen Valley is fostering a collaborative ecosystem involving government, private sector, and academia. ₹200 crore has been allocated for state hydrogen development, supported by capital expenditure

subsidies, skill-building partnerships, and international funding. Odisha's Gopalpur Industrial Park links green hydrogen and clean energy hubs to global export supply chains via strategic infrastructure upgrades. Tata Steel's park model features zero-liquid discharge systems and local skill training.

Major cluster features:

- Dedicated corridors for water, energy, and export logistics
- Capital incentives for green manufacturing startups
- Workforce development through technical education centres

State Policy Landscape: Incentives and Schemes

States are innovating beyond central mandates through progressive policies:

- Gujarat offers capital subsidies and waivers for green hydrogen producers
- Maharashtra provides anchor unit subsidies for hydrogen clusters and urban decarbonisation
- Kerala waives power charges and establishes Green Hydrogen Policy capital grants
- Andhra Pradesh focuses on EV and waste-to-energy alongside renewables, offering tax exemptions and reduced registration fees
- Odisha's IPR 2022 policy caps GST, provides production-linked incentives, and prioritizes domestic tariff benefits for industrial parks These tailored approaches address specific challenges—energy infrastructure gaps, skilled labour shortages, and streamlined permitting cycles.

Challenges and Solutions

India's green transition faces multifactorial challenges:

- Technology and supply chain dependence: India imported $7 billion of solar equipment last year, 63% from China. States are rapidly scaling domestic manufacturing, with PLI schemes for solar, batteries, and electrolysers.
- Grid upgrades and energy storage: High transmission losses demand grid modernization and large-scale battery deployment.
- Skill and employment gaps: A just transition strategy must reskill the 1.2 million workers needed, balancing phased fossil fuel reduction with green job growth.
- Financing gaps: An estimated $3.5 trillion investment deficit requires new financial models, global partnerships, and ESG-aligned funding.

Best Practices: Case Studies from Leading States

Kerala Green Hydrogen Valley

The collaborative model led by ANERT (Agency for New and Renewable Energy Research and Technology) focuses on building a multi-stakeholder ecosystem, integrating government with private companies and international partners. Key actions include:

- Case-based policy support, capital grants, and subsidized electrolysers
- Skill partnerships with universities and global industry leaders
- Infrastructure for hydrogen production and port connectivity, positioning Kerala as a global hydrogen hub

Gopalpur Industrial Park (Odisha)

Developed by Tata Steel SEZ, Gopalpur is emerging as a sustainable green hydrogen centre:

- 30% post-production capital subsidy, GST incentives
- SEZ extension for tariff and regulatory benefits
- Mechatronics and Smart Factory diploma training at JNTTEC centre for workforce growth
- Investment in desalination plants and circular water systems to maintain zero-liquid discharge

Strategic Recommendations

1. **Leverage State Incentives:** Companies should map operations to regions with targeted subsidies, infrastructure, and skilled workforce opportunities for solar, wind, hydrogen, and battery manufacturing.
2. **Scale Public-Private Collaboration:** Industrial clusters thrive on partnership. Businesses should actively pursue joint ventures with state entities, academic centres, and technical institutes.
3. **Adopt ESG and Sustainability Reporting:** With institutional investors increasingly aligning portfolios to sustainability scores, robust ESG frameworks enhance capital access and supply chain resilience.
4. **Invest in Skill Development:** Participation in state-sponsored training and Centres of Excellence in green technologies ensures talent pipelines for new industries.

Conclusion: Green Progress, State-by-State

India’s journey to a low-carbon future runs through its states—each a unique lab of clean energy and green manufacturing innovation. With more than 209 GW of installed renewable capacity and dramatic year-on-year growth, the coming years promise massive opportunities for sustainable jobs, global investments, and world-leading industrial clusters.

State-specific dynamism, tailored incentives, robust partnerships, and strategic manufacturing not only support India’s climate goals but also drive exports, GDP growth, and social impact. For Indian businesses, the green wave is gathering speed—making this the ideal moment to invest, collaborate, and innovate in renewable energy and green manufacturing.